

ATTORNEY DOCKET NO. 00-VE13.25 CPA 1
(PATENT)

REMARKS

The indication of allowability of claim 8 is acknowledged and appreciated. So as to expedite allowance of claims directed to the subject matter indicated to be allowable, and without disclaimer or waiver to permit and include claims of broader or other scope supported by the present disclosure in a continuing application, claim 8 is rewritten in independent form including the limitations of base claim 1 and intervening claim 5. Claims 2 - 4 and 9 - 12 are rewritten to depend from claim 8 thereby also placing those claims in condition for allowance.

Additionally, the substance of the limitations recited by, or limitations similar to, claim 8 have been incorporated into claims 13, 18 and 23. In particular, claim 13 is amended to further include steps of:

detecting movements of a conference participant at a remote station to provide movement information;
transmitting said movement information to a conference station;
controlling a dummy head at said conference station in response to said movement information;

Support for these steps can be found in the specification at page 8, line 23 – page 9, line 11 including the following portion thereof:

The remote participant station 199 may also include a head-tracking sensor 119. A head-tracking sensor can detect movements of a remote participant such as the pan and tilt of a remote participant's head. A sensor, ... mounted on a headband can sense the movement of a head in the pan, tilt, and rotate axes. This movement information can be processed using convertor 163 and transmitted across ISDN facilities 150 using the 16 kbs D channel along with call signaling information. At the conference room station 100, the D channel may be connected to convertor 143 and then to a pan/tilt motorized unit 109 for controlling the dummy head 101. Thus, the dummy head may track the movements of a remote participant's head.

Claim 18, dependent from claim 15, is similarly amended to recite a head-tracking sensor such that the head-related transfer function (HRTF) unit is responsive to the movement information for imparting the HRTF to the audio signal to produce the spatialized audio signal. Again, support for controlling the HRTF is found in the above cited portion of the specification whereby the movement information is used to control orientation of dummy head 101.

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Finally, claim 23 is similarly amended to require:

detecting movements of a conference participant to provide movement information, wherein said step of imparting is responsive to said movement information to create said spatialized audio signal.

As claims 2-5, 8 - 14, 18 and 23 as amended include subject matter indicated by the Examiner to patentably distinguish over the art of record, each is now considered to be allowable and/or in condition for allowance.

Claims 6 and 7 are each amended to incorporate the limitations of original intervening claim 5. Thus, claims 6 and 7 are understood to stand rejected under 35 U.S.C. §103(a) as being unpatentable over Minami (US Patent 4,815,132) in view of Doi (US Patent 4,068,091) for the reasons set forth item 6 of the outstanding Office Action at pages 10 – 13. According to the Examiner:

Minami discloses all limitations of the claim except "wherein the differences between the right and left audio signals represent a head-related transfer function". Doi teaches that binaural recording systems have been known for use in stereophonic recording and that binaural recording provides favorable acoustic characteristics, such that it appears that a person is present to a live setting (column 1, lines 11 -15). Doi also teaches using a dummy head in such binaural recording to provide a natural recording (column 1, lines 30-32). It has been known to those of ordinary skill in the art that using a dummy head in recording inherently provides a HRTF between the right and left audio signals.

It would have been obvious to one of ordinary skill in the art at the time of the invention to seek any known stereo microphone arrangement to use in the system of Minami, since Minami did not specify how to place or arrange the microphones. One excellent choice that one of ordinary skill in the art had available prior to the time of filing was the so-called binaural implementation as disclosed by Doi, the use of which would have provided teleconferencing with improved localization.

The rejection is respectfully traversed for, *inter alia*, lack of motivation provided by the references. To the contrary, Doi is directed to an assembly that substitutes for and therefor teaches away from the use of a dummy head:

...prior art dummy heads are quite similar in shape to a human head having a human face and persons sitting in the audience as, for example,

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in a concert who observe such dummy pickups are unpleasantly affected by such devices. For example if a number of such dummy heads similar to human faces or heads are disposed in a concert hall or the like the entire atmosphere of the hall becomes unpleasant for human listeners present at the concert and, thus, the appreciation of the music is decreased for the persons present at the concert.

Doi, column 1, lines 32 – 42; and

An object of the invention is to provide a novel binaural sound pickup assembly which has the characteristics of a human head but which does not give the appearance to a viewer as a human head.

Doi, column 1, lines 58 - 61.

As Doi teaches away from use of a dummy head, the disclosure is completely silent on how to make a dummy head. Further, as recognized by the Examiner, Doi neither teaches nor suggests a dummy head or, for that matter, any other type of device for providing an HRTF between right and left audio signal. To the contrary, Doi never suggests or even uses the term HRTF or any equivalent terminology. Instead, the Examiner relies on Doi's admonitions against using a dummy head to conclude that those skilled in the art would be motivated to do the contrary. However, even if so motivated, lacking any explanation for how to build or what features are important in construction of a dummy head, there is no basis to believe that such a device would result in producing an HRTF. That is, absent any mention of an HRTF or how to construct a device that would produce an HRTF, the Examiner's reliance on Doi is misplaced.

Further, even if Doi did not teach away from use of a dummy head, it would still be improper to use the teachings of Doi to modify the structure taught by Minami absent some suggestion for the combination provided by the references; here there is no such suggestion. It is insufficient that selecting a particular modification may constitute an "excellent choice" absent a teaching to make the selection.

Such rationale constitutes no more than hindsight. New inventions are almost always new combinations of the old; many provide some advantage over the prior art. However, it is not sufficient to recognize that the combination would provide certain advantages unless such advantages were known in the prior art *because the combination was known*. Here, there is no evidence that there was any motivation for making the combination asserted by the Examiner.

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The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In *re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." (916 F.2d at 682, 16 U.S.P.Q.2d at 1432.). See also In *re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

It is well established that, even if all aspects of the claimed invention were individually known in the art, such is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). It is, therefore, incumbent upon the Examiner to provide some suggestion of the desirability of doing what the inventor has done in the Examiner's formulation, imposition and maintenance of a rejection under 35 U.S.C. 103(a). "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985).

For the reasons presented, claims 6 and 7 are considered to be non-obvious and patentably distinguishable over the applied art. Accordingly, withdrawal of the outstanding rejection under 35 U.S.C. §103(a) and allowance of claims 6 and 7 are respectfully requested.

Independent claims 15, 19, 22 and 24 are amended to incorporate limitations along the lines of their dependent claims. Thus, independent apparatus claim 15 is amended to require both compression and decompression units, the specific placement of these units being specified by dependent claims 16 and 17. Similarly, independent method claim 19 now recites steps of compressing and decompressing an audio signal, with dependent claims 20 and 21 specifying specific sequences for these steps amongst the other steps recited by claim 19. Independent method claim 22 is amended to incorporate the limitations of original dependent claim 23, and independent apparatus claim 24 is amended to incorporate the limitations of original dependent claim 26. Thus, independent claims 15, 19, 22 and 24 each include compression and (in all but

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claim 24) decompression elements along the lines previously recited by ones of their respective dependent claims. Thus, for purposes of the instant response, the outstanding rejections of claims 16/17; 20/21; 23; and 25/26 will be considered as now applicable to their respective independent claims as the corresponding limitations (or similar equivalents) of the former are now recited by the latter.

In particular, the subject matter now recited by claims 15, 19, 22 and 24 is believed to be addressed at section 8 of the outstanding Office Action at pages 15 – 19 and thereby stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nahumi (US Patent 5,390,177) in view of Boggs and Begault. According to the Examiner:

...As shown in claim 15, Boggs does not actually define an HRTF, but ITD and IID functions. The rationale used in the rejection of claim 15 further provides the motivation to use the teachings of Begault in order to upgrade the performance of Boggs by using an HRTF in place of the simple ITD and IID functions.

Office Action at page 16, lines 10 – 13.

This rejection is respectfully traversed as being improperly based on hindsight gleaned from applicant's disclosure, as in the case of claims 6 and 7. Again, as set forth above, it is insufficient for the Examiner to recognize that the upgraded performance can be achieved by using an HRTF in place of an ITD and IID function where the references neither teach nor suggestion the modification. Absent motivation supplied by the references themselves, the combination is proper for, *inter alia*, the reasons present supra in connection with claims 6 and 7. Accordingly, it is believed that independent claims 15, 19, 22 and 24 together with claims 16/17; 20/21; 23 and 25/26 dependent therefrom are non-obvious over the art of record and withdrawal of the outstanding rejection of those claims is respectfully requested.

While claim 1 is not cancelled so as to avoid the necessity of rewriting both claims 6 and 7 in independent form and incurring additional claim fees prior to an indication of allowability of the latter claims, an appropriate amendment will be submitted upon withdrawal of the outstanding rejections of claims 6 and 7.

In summary, claims 2 – 25 are now considered to be in condition for allowance.

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Favorable reconsideration of the application, as amended, and an early notification of allowance are respectfully requested.

Applicants have filed concurrently herewith a Petition for a Two-Month Extension of Time. However, if any other or additional fee is due, please charge our Deposit Account No. 07-2347 from which the undersigned is authorized to draw and please credit any excess fees to such deposit account.

Respectfully submitted,



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